

PSEUDOCYCLOPS LEPIDOTUS, A NEW SPECIES
OF DEMERSAL COPEPOD
(CALANOIDA: PSEUDOCYCLOPIDAE) FROM
THE NORTHWESTERN PACIFIC

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Abstract. — *Pseudocyclops lepidotus*, is described from Kuchinoerabu Island, off Kyushu, Japan. The main diagnostic characters are the lateral clefts in pediger 5, foliaceous urosomal scales, and structure of the fifth legs in both sexes.

Although most oceanic calanoid copepods are planktonic, many coastal species are demersal and occupy restricted habitats on or near the substrate. Such species may be overlooked or misidentified owing to their small size and resemblance to cyclopoid copepods. Several families of calanoids are comprised entirely of demersal species, the largest and most widely distributed of these being the family Pseudocyclopidae Giesbrecht, 1893. This family is monogeneric, containing only the genus *Pseudocyclops* Brady, 1872.

Pseudocyclops at present contains 26 described species, 15 of which have been collected only from the North Atlantic. Only three species have been described from the Pacific: *P. australis* Nicholls, 1944, from southern Australia; *P. pacificus* Vervoort, 1964, from the Caroline Islands; and *P. bilobatus* Dawson, 1977, from southern California. *P. australis* was subsequently reported by Tanaka (1966) from Kyushu, Japan, close to the type locality of the new species described below. Our specimens were obtained with a hand-held plankton net while using SCUBA over a coral sandy bottom at a depth of 9 m off Kuchinoerabu Island, Kyushu, Japan.

Pseudocyclops lepidotus, new species
Figs. 1–5

Material. — Dissected female holotype (USNM 229956), and dissected male allo-

type (USNM 229957) collected 10 Sep 1986 from Nishino-Hama, Kuchinoerabu Island, Kagoshima Prefecture, Japan. Two female paratypes (USNM 229958), one dissected on slides and one whole, collected on same date from same locality.

Description. — Female (Fig. 1A, B): length 0.90 mm, body compact, prosome oval in dorsal view; cephalosome partly fused with pediger 1, produced anteroventrally into acute rostrum (Fig. 1C); pediger 5 separate from pediger 4, with dorsolateral cleft bearing small seta (Figs. 1B, D; 5A). Urosome (Fig. 1E) 4-segmented, segments bearing transverse rows of subtriangular foliaceous scales, many of which have fallen off during dissection (Fig. 5B); genital segment longer than following segments combined, openings widely separate; segment 3 (Fig. 5C) with two dorsal processes reaching mid-length of caudal rami; anal segment reduced, telescoped into segment 3; caudal ramus serrate posterodorsally, bearing one dorsal, one lateral and four apical setae.

First antenna (Fig. 1F, G) 20-segmented, reaching posterior end of first pediger; segment 1 with rows of anterior surface spinules, three large esthetascs; suture between segments 17 and 18 incomplete.

Second antenna (Fig. 2A) with basipodal segments each bearing one seta on distomedial margin; endopod three-segmented, segment 1 with two setae on medial margin and small spinules on outer distal margin,

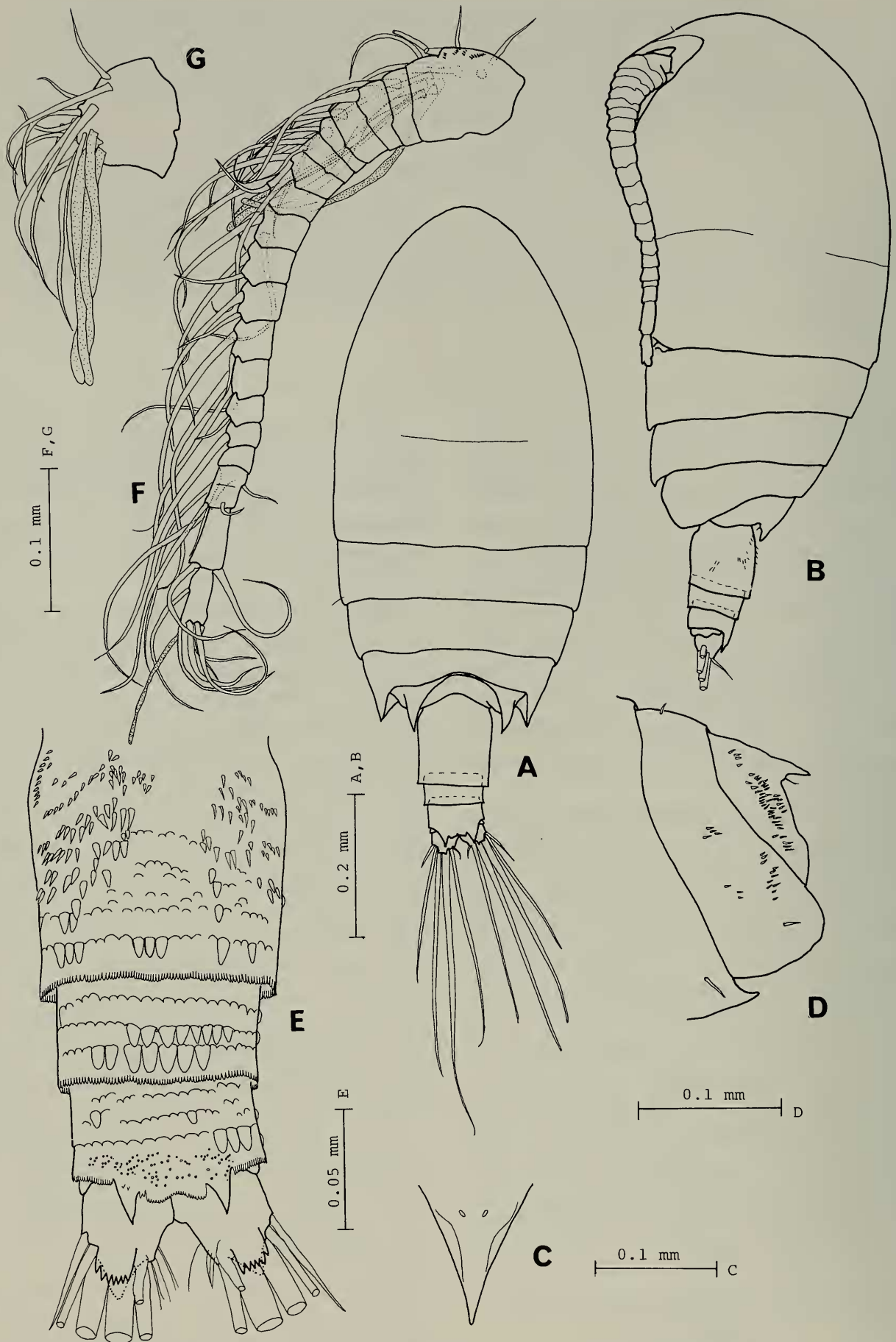


Fig. 1. *Pseudocyclops lepidotus*, female: A, Habitus, dorsal; B, Habitus, lateral; C, Rostrum, ventral; D, Pedigers 4-5, lateral; E, Urosome, dorsal; F, First antenna; G, First antenna, segment 1.

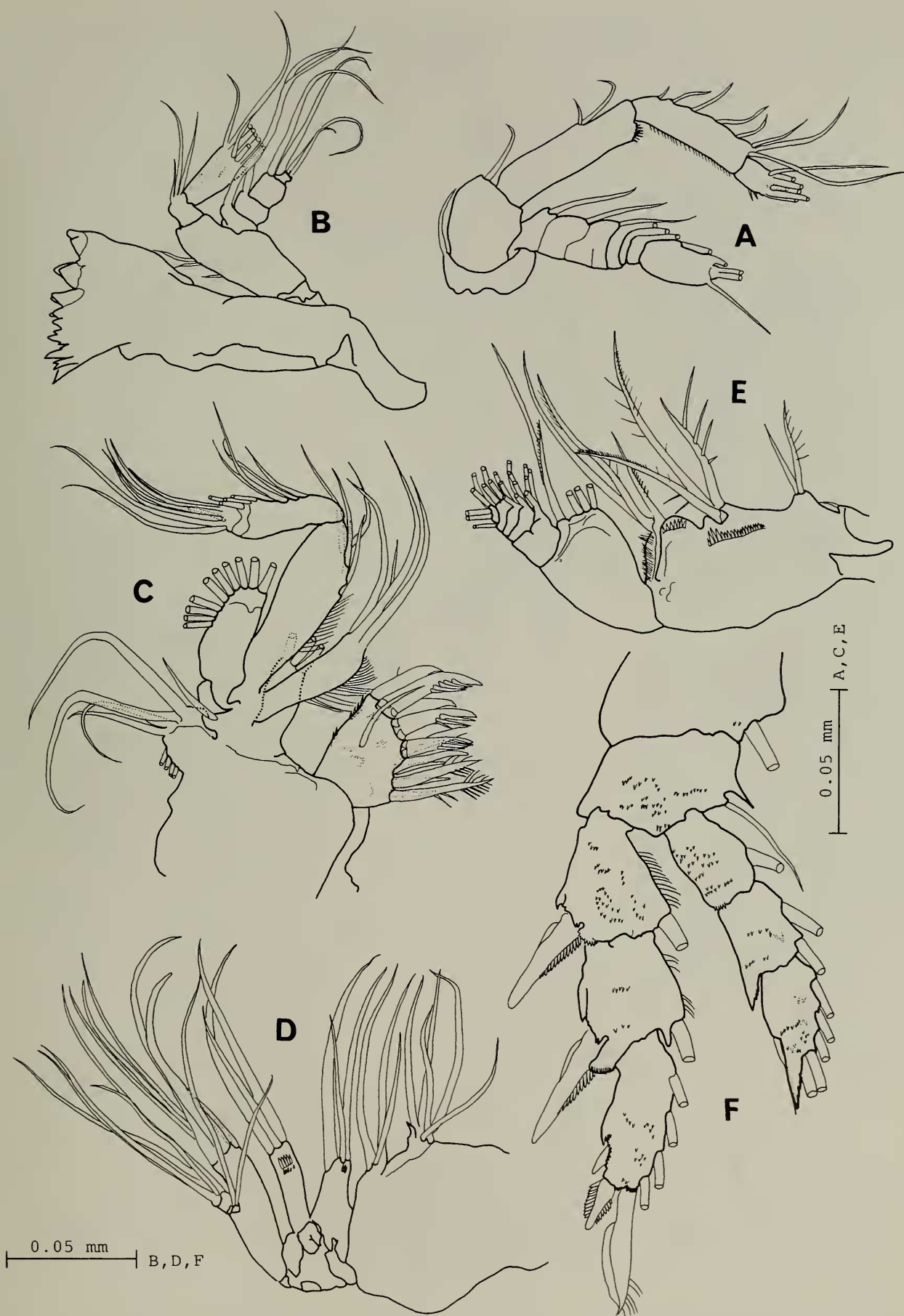


Fig. 2. *Pseudocyclops lepidotus*, female: A, Second antenna; B, Mandible; C, First maxilla; D, Second maxilla; E, Maxilliped, posterior; F, First leg, anterior.



Fig. 3. *Pseudocyclops lepidotus*, female: A, Second leg, anterior; B, Third leg, anterior; C, Fourth leg, anterior; D, Fifth leg, anterior.

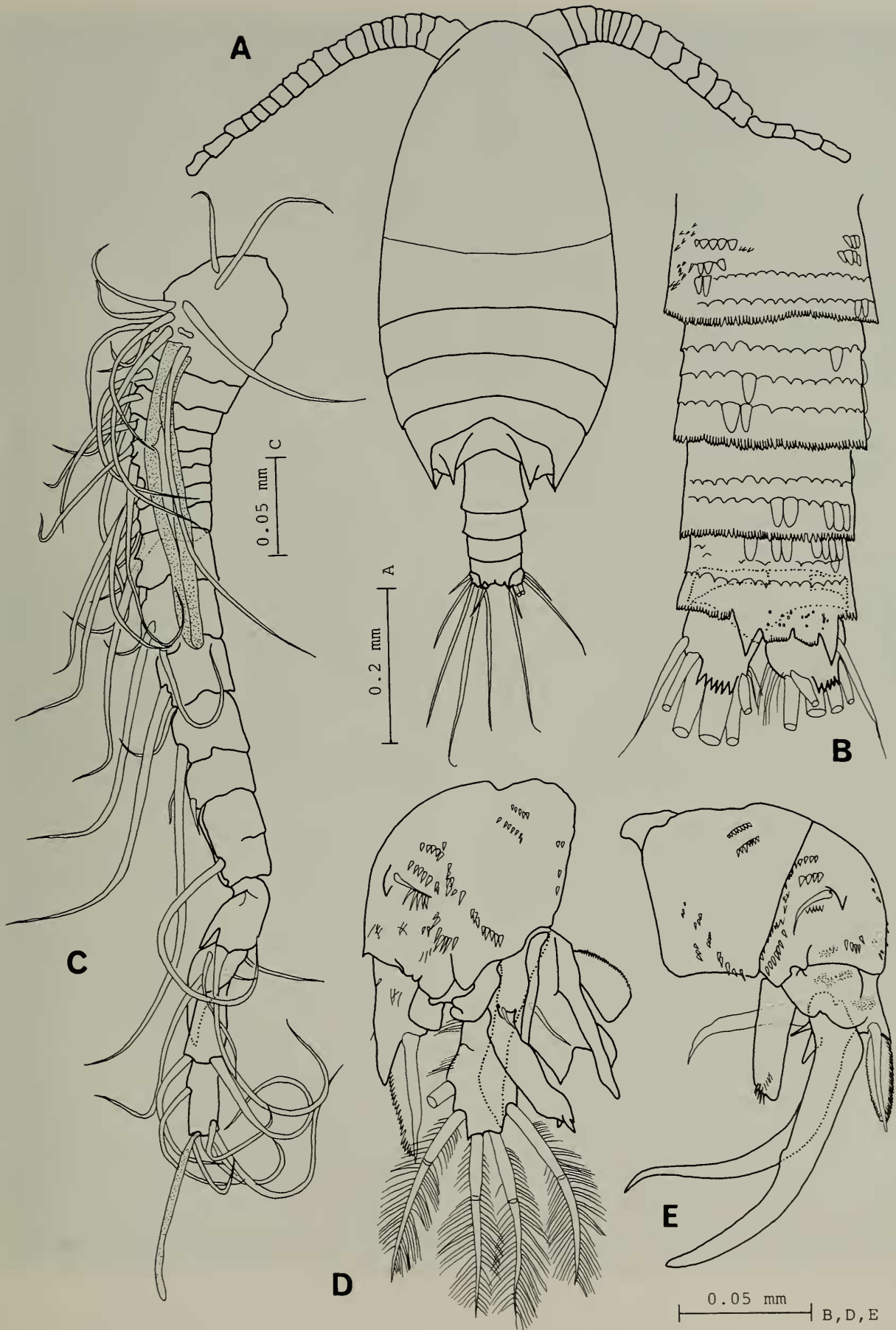


Fig. 4. *Pseudocyclops lepidotus*, male: A, Habitus, dorsal; B, Urosome, dorsal; C, Right first antenna; D, Left fifth leg, posterior; E, Right fifth leg, posterior.

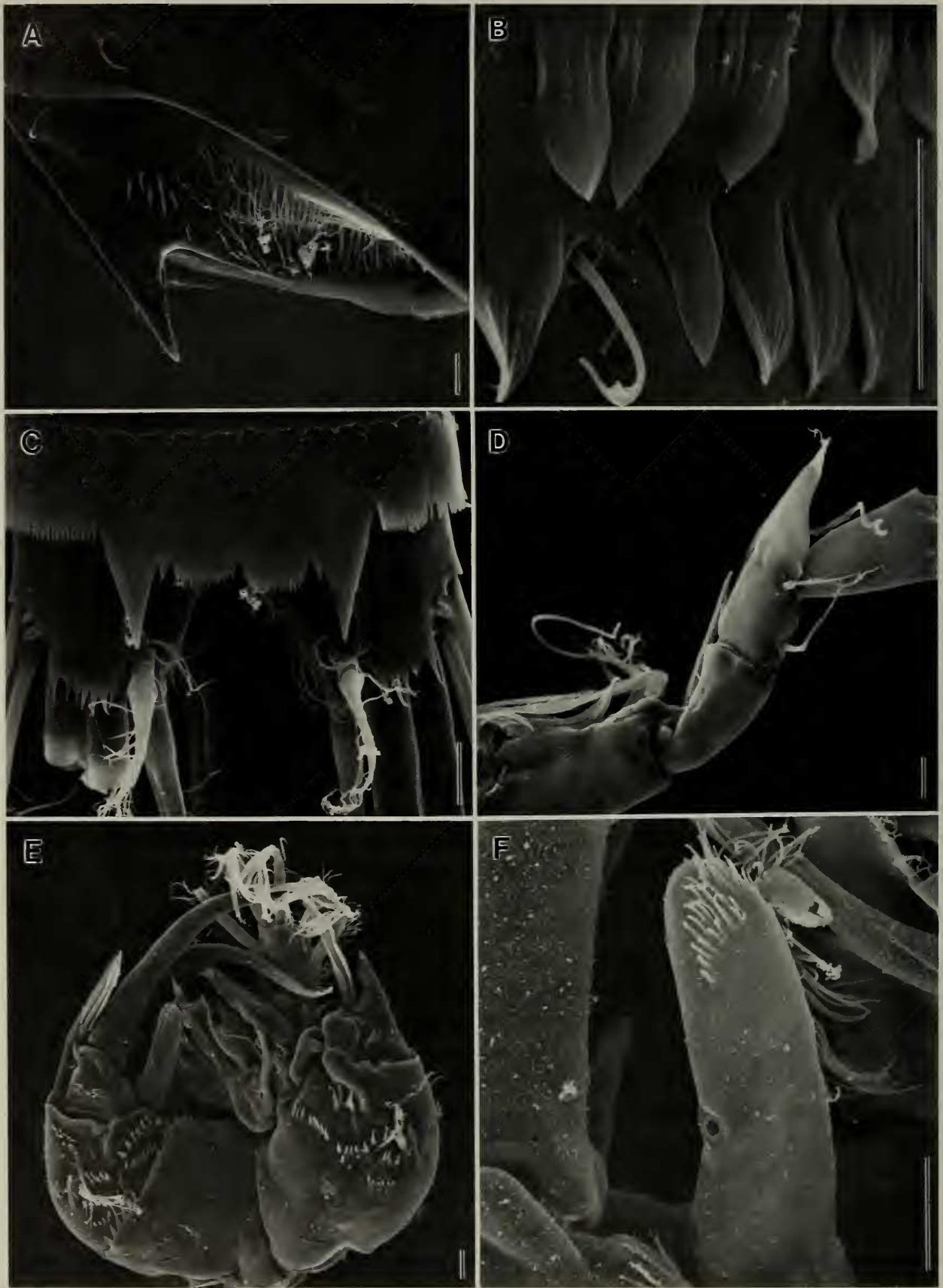


Fig. 5. *Pseudocyclops lepidotus*, female: A, Pediger 5, lateral; B, Scales on urosome segment 2, dorsal; C, Urosome, posterodorsal. Male: D, Right first antenna, segments 14-18; E, Fifth legs, posterior; F, Right endopod, fifth leg, posterior. Scale bars = 10 microns.

segment 2 with five medial and three terminal setae, segment 3 with seven terminal setae; exopod seven-segmented, segments 1–6 each with one terminal seta, segment 7 with one medial and four terminal setae.

Mandible (Fig. 2B) with 8 heavily sclerotized teeth on gnathobase; basis with 3 medial setae; endopod with 2 segments, bearing 3 and 10 setae, respectively; exopod 4-segmented, bearing 1, 1, 1, and 3 setae, respectively.

First maxilla (fig. 2C) with first inner lobe bearing 9 strong terminal spines, 4 setae on posterior surface, 1 seta on anterior surface; second and third inner lobes with 3 and 4 setae, respectively; outer lobes 1 and 2 with 8 and 1 setae, respectively; basis 2 bearing 4 distomedial setae; endopod 2 segmented, bearing 8 medial and 7 terminal setae; exopod one-segmented, with 10 setae.

Second maxilla (Fig. 2D) with five inner lobes bearing five, three, three, three, and seven setae, respectively; endopod reduced, indistinctly segmented, bearing seven setae.

Maxilliped (Fig. 2E) with coxa carrying four lobes bearing one, two, three, and three setae, respectively, lobes three and four with surface spinules; basis with two lobes bearing three and two setae, respectively; endopod five-segmented, bearing four, four, three, four, and four setae, respectively.

Legs 1–4 (Figs. 2F; 3A–C) with three-segmented rami, all bearing anterior and posterior surface spinules; leg 1 (Fig. 2F) with acute medial process and inner seta on basis, distolateral margins of endopod segments 2 and 3 acutely produced, distolateral margins of exopod segments 1 and 2 produced into blunt serrate processes; leg 2 (Fig. 3A) with serrate lateral margins of exopod segments 2 and 3; leg 4 (Fig. 3C) with short external seta on basis, endopod segment 3 bearing 7 setae.

Fifth leg (Fig. 3D) smaller than fourth, basis with short outer posterior seta; endopod three-segmented, segments 1 and 2 produced distolaterally into bifurcate pro-

cess, segment 3 bearing six setae; exopod segment 3 with four inner setae and four flanged spines, innermost spine narrow, only flanged at base.

Male (Fig. 4A): length 0.73 mm, prosome as in female. Urosome (Fig. 4B) 5-segmented, adorned with rows of foliaceous “scales,” anal segment and caudal rami as in female.

Left first antenna 20-segmented, segments 4 and 5 partly fused, otherwise as in female. Other cephalic appendages, rostrum and legs 1–4 as in female.

Right first antenna (Fig. 4C) 19-segmented, geniculate between segments 15 and 16 (Fig. 5D); segments 14 and 15 partly fused, bearing a sinuous process on anterior margin; segment 16 with acute lateral process; segment 17 produced distally into sharp triangular process curving medially, almost reaching end of segment 18.

Fifth legs (Figs. 4D–E, 5E) asymmetrical, biramous, highly modified. Basipodal segments of left leg (Fig. 4D) fused, those of right leg (Fig. 4E) separate, all with posterior surface spinules. Left endopod one-segmented, reaching tip of left exopod, bearing five plumose setae; left endopodal process slender, narrowing distally, confluent with basis, reaching end of endopod. Left exopod two-segmented, segment 1 with terminal spine flanged laterally, segment 2 complex, membranous, bearing four lobes: innermost lobe spatulate, medial margin serrate; second innermost lobe elongate, narrowed at tip; second outermost lobe half as wide as long, bearing proximal seta, distal margin with v-shaped cleft; outermost lobe longest, three times as long as wide, tip dissected into three acute processes, bearing small seta at base. Right endopod (Fig. 5F) one-segmented, narrow; small posterior sensory pit on lateral margin; distal margin blunt, with patch of small setae. Right exopod one-segmented, with flanged outer spine and two long equal spines curving medially, innermost spine narrowed to acute apex, tip

curved laterally, with two setae and naked process at base.

Etymology.—The specific name, *lepidotus* (G.), meaning “with scales,” refers to the foliaceous scales on the urosome of both sexes.

Discussion.—Known species of *Pseudocyclops* are demersal, spending the greater part of the diel cycle on or near the substrate. The nearly spherical shape and short first antennae limit the ability of these copepods to remain in the water column. *P. lepidotus*, however, is unique among members of the genus in possessing relatively long first antennae. In previously known species, the first antennae have from 15 to 18 segments and scarcely extend beyond the cephalosome. In *P. lepidotus* the first antennae have 20 segments and extend beyond the end of the first pediger. This feature, combined with its comparatively large size and light purple coloration often associated with planktonic species, suggests that *P. lepidotus* may spend more time in the water column than other species in the genus.

The unique characteristics of urosomal scales, lateral clefts in pediger 5 and elongate first antennae, separate this species from all known species of the genus. At least one undescribed species of *Pseudocyclops* occurring in the western Pacific is closely related to this new species (Barr, unpublished). This undescribed species, collected from coastal waters off Guam and the Philippines, possesses all of the above-mentioned characters. It differs from *P. lepidotus* in details of the fifth legs in both sexes and will be described in a forthcoming paper.

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